

2016/05: Should animals be used for product testing, medical research and surgical skills training?

What they said...

'The procedures these animals have been subjected to are gruesome and could even be compared with Frankenstein-like experiments'

Helen Marston, the HRA chief executive officer

'The researchers and technicians that work with animals...feel a remarkably deep sense of responsibility that comes with the privilege of being able to work with them'

Professor Doug Hilton, director of the Walter and Eliza Hall Institute

The issue at a glance

In April, 2016, media attention was focused on a PETA (People for the Ethical Treatment of Animals) petition urging the Royal Australasian College of Surgeons (RACS) to cease using live animals in a surgical training course called Early Management of Severe Trauma (EMST). The objections of one petition signatory, who is now a plastic surgeon, to the use of animals during her training has been particularly highlighted.

The Royal Australasian College of Surgeons has defended the use of live animals in some types of surgical training as the most effective way to prepare surgical trainees.

Relatedly, there have been calls over many years for Australia to ban the sale of cosmetic products which have ingredients tested on animals anywhere in their production history (including ingredients supplied from other countries).

These calls have intensified since 2013 when the European Union, India and Israel strengthened their legislation against such products. While there have long been calls in both Australia and overseas for the end of medical research using animals.

In February, 2016, The Australian Labor Party introduced legislation to ban cosmetics animal testing in Australia and the import and manufacture of newly animal-tested cosmetic products and their ingredients.

Data released in January, 2016, on the more than six million animals, including baboons, dogs, cats and native mammals, being used every year in Australia for medical research, experiments and surgical skills training has led to renewed calls for the reduction or total ban of such practices.

The National Health and Medical Research Council (NHMRC) is responsible for funding research involving animals. It is currently reviewing its policy on the care and use of non-human primates for scientific purposes.

Background

(The information given below has been abbreviated from a Wikipedia entry titled 'Animal testing'. The full entry can be accessed at https://en.wikipedia.org/wiki/Animal_testing)

Animal testing, also known as animal experimentation, animal research, and in vivo testing, is the use of non-human animals in experiments. Worldwide it is estimated that the number of vertebrate animals-from zebrafish to non-human primates-ranges from the tens of millions to more than 100 million used annually. Most animals are euthanised after being used in an experiment. Sources of laboratory animals vary between countries and species; most animals are purpose-bred, while others are caught in the wild or supplied by dealers who obtain them from auctions and pounds. The research is conducted inside universities, medical schools, pharmaceutical companies, farms, defence establishments, and commercial facilities that provide animal-testing services to industry. It includes pure research such as genetics, developmental biology, behavioural studies, as well as applied research such as biomedical research, xenotransplantation, drug testing and toxicology tests, including cosmetics testing. Animals are also used for education, breeding, and defence research. The practice is regulated to various degrees in different countries.

Education

It is estimated that 20 million animals are used annually for educational purposes in the United States including, classroom observational exercises, dissections and live-animal surgeries. Frogs, fetal pigs, perch, cats, earthworms, grasshoppers, crayfish and starfish are commonly used in classroom dissections. Alternatives to the use of animals in classroom dissections are widely used, with many U.S. States and school districts mandating students be offered the choice to not dissect. Citing the wide availability of alternatives and the decimation of local frog species, India banned dissections in 2014.

Supporters of the use of animals in experiments and surgical training, such as the British Royal Society, argue that virtually every medical achievement in the 20th century relied on the use of animals in some way, with the Institute for Laboratory Animal Research of the United States National Academy of Sciences arguing that even sophisticated computers are unable to model interactions between molecules, cells, tissues, organs, organisms, and the environment, making animal research necessary in many areas. It is similarly argued that no currently available mannequins or virtual devices adequately recreate all the features of operating on a living mammal.

Animal rights, and some animal welfare, organisations-such as PETA and BUAV-question the legitimacy of using animals for research and surgical skills training, arguing that it is cruel, poor scientific practice, poorly regulated, that medical progress is being held back by misleading animal models, that some of the tests are outdated, that it cannot reliably predict effects in humans, that the costs outweigh the benefits, or that animals have an intrinsic right not to be used for experimentation or surgical training.

Current developments in Australia regarding animal testing, research and surgical skills training

(This information has been taken from Humane Research Australia site. The information can be accessed at <http://www.humaneresearch.org.au/campaigns/choosingcrueltyfree>)

February 2016 - The Australian Labor Party introduced legislation to ban cosmetics animal testing in Australia and the import and manufacture of newly animal-tested cosmetic products and their ingredients.

January 2016 - Seven of Australia's leading animal protection organisations - Humane Society International, Humane Research Australia, Animals Australia, World Animal Protection, International Fund for Animal Welfare, Voiceless the animal protection institute, and Choose Cruelty Free - wrote an urgent open letter to the Minister for Rural Health, Senator Fiona Nash, urging the government to bring forward meaningful legislation to ban animal testing of cosmetics and the sale of cosmetics newly animal tested abroad. Read more here.

September 2015 - A motion in support of ending cruel animal testing for cosmetics was moved in the House of Representatives by Government MP Jason Wood. The cross-party motion was seconded by Liberal MP Steve Irons, with the support of Labor MPs Kelvin Thompson and Melissa Parke, and Greens MP Adam Bandt.

November 2014 - A cross-party Senate motion was passed in support of ending animal testing for cosmetics. The motion was co-sponsored by Liberal Senator Anne Ruston, Greens Senator Lee Rhiannon, Labor Senator Lisa Singh, Nationals Senator Barry O'Sullivan, Independent Senator Glenn Lazarus, Palmer United Party Senator Zhenya Wang, Independent Senator Nick Xenophon, and Australian Motoring Enthusiast Party Senator Ricky Muir. Read more here.

September 2014 - Be Cruelty-Free Australia made a detailed submission to the Australian Labor Party's Cosmetics and Animal Testing Policy Consultation, calling for a ban on the importation, manufacture, and sale of cosmetic products and ingredients tested on animals. The consultation received over 13,000 submissions, 92% of which supported a ban on cruel cosmetics. Labor is now in the process of developing policy options in response to this evidence of overwhelming support.

March 2014 - Be Cruelty-Free Australia worked with the Australian Greens Party to help launch the End Cruel Cosmetics Bill. The Bill 2014 was introduced into the Senate on March 18th 2014. This legislation would amend the Industrial Chemicals (Notification and Assessment) Act 1989 (the ICNA Act) to prohibit developing, manufacturing, selling, advertising or importing into Australia cosmetics, or ingredients for cosmetics, which have been tested on live animals after the commencement of Schedule 1 to the Bill.

This progress towards prohibiting cosmetics animal testing in Australia reflects both the global trend to end cosmetics animal testing and the will of the majority of Australians who oppose using animals for the development of cosmetics.

Internet information

On April 26, 2016, The Age published a comment by John Cunningham, an orthopaedic spinal surgeon at the Royal Melbourne Hospital and the Epworth Richmond.

The comment is titled 'Surgeons trained on living animals save lives' and is a defence of some surgical skills training being conducted using living animals.

The full text of this comment can be found at <http://www.theage.com.au/comment/surgeons-trained-on-live-animals-save-lives-20160420-gobgug.html>

On April 15, 2016, 3AW conducted a radio interview with Dr Jill Tomlinson, a plastic surgeon, who has signed a petition calling on the Royal Australasian College of Surgeons to stop using live animals in the skills training of surgeons.

The full interview can be accessed at <http://www.3aw.com.au/news/call-for-practicing-surgeons-to-stop-using-live-animals-20160414-go6npq.html>

On February 17, 2016, The Huffington Post published an article titled 'Scientists Explain Why Animal Testing and Research Happens in Australia'

The article presents the views of both researchers and animal activists. The full text can be accessed at http://www.huffingtonpost.com.au/2016/02/17/animal-testing-australia-primates_n_9247608.html

On January 31, 2016, the Sydney Morning Herald published an expos and background piece titled 'Millions of animals around Australia subjected to experiments and surgery'

The article presents the results of a piece of investigative reporting by Natalie O'Brien into the extent of the use of

animals in medical research and surgical skills training. The article also presents a range of points of view on the use of animals for these purposes.

The full text of the article can be found at <http://www.smh.com.au/environment/animals/millions-of-animals-around-australia-ssed>

On December 21, 2015, On Line published a comment by Helen Marston, the chief executive officer of the Humane Research Australia. The opinion piece is titled 'New publication demonstrates the need to replace animal models in medical research' and can be accessed at <http://www.onlineopinion.com.au/view.asp?article=17908>

On November 21, 2015, The Huffington Post reported on the British Lush Awards, recognising scientists who developed ways of testing new treatments and procedures that do not involve animals. The full text of the article can be accessed at http://www.huffingtonpost.co.uk/2015/11/21/brian-may-scientists-lush-prize-non-animal-research_n_8616130.html

On October 5, 2015, The Australian published an article titled 'Monkey business fails to protect primates' The news report deals with the apparent failing of British legislation intended to protect monkeys used for research purposes. The full text of the article can be found at <http://www.theaustralian.com.au/higher-education/monkey-business-fails-to-protect-primates/news-story/e73b7feab54a7d70c28c10ceb7b77050>

On June 23, 2015, The Guardian published a news report titled 'The end of animal testing? Human-organs-on-chips win Design of the Year' The report details the London Design Museum awarding its annual prize to 'human-organs-on-chips', a development which allows silicone chips, lined with living human cells to mimic the tissue structures and mechanical motions of human organs, promising to accelerate drug discovery, and decrease development costs and lead to personalised medicine. The full text of the article can be accessed at <http://www.theguardian.com/artanddesign/2015/jun/22/the-end-of-animal-testing-human-organs-on-chips-win-design-of-the-year>

On July 2, 2014, The Conversation published a comment by Dr Monika Merkes, Honorary Associate, Australian Institute for Primary Care & Ageing, La Trobe University and Rob Buttrose, University of Melbourne. Both Merkes and Buttrose disclosed that they are on the Committee of Management of Humane Research Australia. The comment is titled 'Why Australia needs to catch up on animal research transparency'. It argues that Australia's use of animals for scientific research should be more open to scrutiny and accountable. The full text can be accessed at <https://theconversation.com/why-australia-needs-to-catch-up-on-animal-research-transparency-27169>

On August 1, 2013, Dr Monika Merkes, a social researcher and policy consultant based in Melbourne, who is a member of the Humane Research Australia advisory panel had a comment she had written in conjunction with Rob Buttrose, a philosopher and computer scientist, published on the ABC's comment site, The Drum. Merkes and Buttrose are critical of the regulatory code supposedly protecting animals used for scientific purposes in Australia. The full text of the comment can be accessed at <http://www.abc.net.au/news/2013-08-01/merkes-and-buttrose-animal-testing/4857604>

Animals Australia, an Australian-based animal welfare group, has produced a fact sheet outlining the shortcomings of using animals for product testing, medical research and education. The paper also outlines alternatives to the use of animals. The full text of this fact sheet can be found at http://www.animalsaustralia.org/factsheets/animal_experimentation.php

The National Health and Medical Research Council's (NHMRC) Australian Code for the Care and Use of Animals for Scientific Purposes 8th edition (2013) can be accessed at <http://www.nhmrc.gov.au/book/australian-code-care-and-use-animals-scientific-purposes-8th-edition-2013> The Code is a detailed statement of the regulations that govern the use of animals for scientific purposes (including product testing, medical research and surgical skills training) in Australia.

The attitude of the Australian Royal Society for the Protection of Animals can be read on the RSPCA's Internet page. The organisation notes that although these regulations 'vary considerably in the way in which... [they] are enforced and the standards of housing and care that are applied' by international standards 'animal care in Australian laboratories are generally considered to be high'. The Society's Internet page can be accessed at http://kb.rspca.org.au/How-is-animal-research-regulated-in-Australia_8.html

Choose Cruelty Free is an Australian organisation that promotes Australian companies that do not test their products on animals or have components of their products tested on animals overseas.

A full list of the companies that do not animal-test can be accessed at <http://www.choosecrueltyfree.org.au/cruelty-free-list/>

The United States Animal Research site gives a range of information and arguments in support of animals being used in scientific research.

This information can be accessed at <http://www.animalresearchcures.org/typesneeded.htm>

Arguments against using animals for product testing, medical research and surgical skills training

1. Using animals for product testing, medical research and surgical skills training does not produce reliable results

It has been claimed that the differences between animal species and human being are so great that product testing, medical research and surgical skills training done on animals does not adequately approximate how products, treatments or surgical procedures would affect a human body.

According to the United States Food and Drugs Administration nine out of ten drugs deemed successful through animal tests, fail in human clinical trials.

Overestimation of the human benefits of invasive animal research appears to be widespread. In a 2011 review of research using non-human primates, in which a panel of eminent scientists examined virtually all UK primate research conducted during a recent decade, the reviewers concluded, 'In most cases [...] little direct evidence was available of actual medical benefit in the form of changes in clinical practice or new treatments.'

In an opinion published in The Conversation on August 7, 2013, Andrew Knight, Associate Professor for Welfare and Ethics, Ross University School of Veterinary Medicine, has concluded, 'The overwhelming majority of invasive animal experiments do not pass the cost-benefit test required by regulations and expected by society.'

Dr Denise Russell, a research fellow at the University of Wollongong specialising in animals and ethics, has similarly stated, 'The fact that there is poor transferability from animal to human studies suggests using animals to find out about humans is misguided.'

The animal welfare group, Animals Australia, has given specific instances of the inadequacy of animal testing to determine the safety and effectiveness of treatments for humans.

Animals Australia's Internet site states, 'The main problem with animal research which claims to relate to the causes of human disease or development of human disease therapies, is that animals are not humans. Results with "animal models" of human diseases can therefore be very misleading. Similarly, results from animals predicting toxic side effects of drugs can be wrong. This is what happened in the early 1960s with thalidomide, which was tested in the usual range of laboratory animals, such as rats and mice. The results of these tests did not reveal any problems and thalidomide was granted a licence for use as a sedative in pregnant women. As most people know, the result was the birth of thousands of babies with horrendous birth defects, such as missing limbs.'

2. There are other ways of product testing, and conducting medical research and surgical skills training

In all areas - product testing, medical research and surgical skills training - it is argued there are now options available which are as good as or better than the use of animals.

The animal welfare group, Animals Australia, has noted regarding medical research, 'The human genome has now been cloned, which means that researchers can work with human proteins expressed in immortal cell lines, which can be grown in large quantities in the laboratory. This means that researchers no longer have the excuse that animal experiments are the only available option to research human disease and cellular function.'

The United Kingdom based Lush Award has been instituted to acknowledge scientists who have developed testing regimes that do not involve animals. The 2015 awards gave special recognition to scientists who have been involved in mapping the world's first human toxicity pathway. Four scientists won Lush's breakthrough award for their work in improving the understanding of toxicity inside the cells of human organisms. By using technologies such as genetics and computing, scientists have been able to explain at a molecular level how a toxic chemical can enter the human body and lead to a recurring allergic skin reaction.

In Jun, 2015, the London Design Museum awarded its annual prize to 'human-organs-on-chips', a development which allows silicone chips, lined with living human cells to mimic the tissue structures and mechanical motions of human organs, promising to accelerate drug discovery, and decrease development costs and lead to personalised medicine.

The micro-devices work by recreating the tissue interfaces of human organs inside a transparent polymer 'chip', so the behaviours of bacteria, drugs and human white blood cells can be easily monitored through a microscope.

Paola Antonelli, design curator at New York's Museum of Modern Art, has stated, 'This is the epitome of design innovation. Removing some of the pitfalls of human and animal testing means, theoretically, that drug trials could be conducted faster and their viable results disseminated more quickly.'

3. Using animals for product testing, medical research and surgical skills training is disrespectful of animal life

It has been claimed that the number of animals used in Australia for medical research and surgical skills training is indicative of a lack of regard for animal life.

Helen Marston, the chief executive of Humane Research Australia, has claimed that Australia is the fourth highest user of animals in experiments and surgery training in the world after China, Japan and the US. More than six million animals, including baboons, dogs, cats and native mammals, are being used every year in Australia for medical research, experiments and surgical skills training, according to official figures. These figures are inevitably conservative as some states, including Queensland, have stopped revealing the number of animals used. The last figure that has been made

available was for 2009.

Ms Marston has further stated that there has been a resistance in Australia to moving away from the use of animals despite available alternatives that are being used around the world.

Dr Denise Russell, a research fellow at the University of Wollongong specialising in animals and ethics, has claimed that most of the experiments performed on live animals in Australia were not done to get a cure for human disease. Her comments suggest that many of these experiments do not demonstrate an adequate regard for animal life.

Dr Russell has stated, 'There's often hype about a new drug then nothing eventuates. All this suggests we are looking in the wrong place and alternatives should be investigated.'

A similar point was made by Dr Monika Merkes, a social researcher and policy consultant based in Melbourne. She is a member of the Humane Research Australia advisory panel and she has commented on animal welfare issues with her collaborator, philosophy and computer science student, Rob Buttrose.

Dr Merkes has been critical of the purposes for which animal research is often conducted. Dr Merkes has asked, 'How could animal experiments like the following be justified: shaking lambs' heads until they die to test hypotheses about "shaken baby syndrome", breast implants in pigs, brain surgery on marmosets, and more recently, implanting false memories into mouse brains?'

4. Using animals for product testing, medical research and surgical skills training can involve cruelty

It has been claimed that many of the treatments and procedures imposed upon animals inevitably involve some suffering.

In an expose published in the Sydney Morning Herald on January 31, 2016, investigative journalist Natalie O'Brien stated, 'There were more than 25,000 animals subject to an experiment with "death as an endpoint", in which the animal is suffering and the death of the animal is planned but the animal is not euthanised.' O'Brien's claim refers to research she has undertaken for Fairfax media in 2015 on the use of animals for product testing, medical research and surgical skills training.

In the same Fairfax media report Natalie O'Brien noted that nationally, there were 123,975 animals used in the 'major physiological challenge' category of research, which means 'the animals remain conscious for some or all of the procedure ... which causes moderate or large degree of pain/distress, which is not quickly or effectively alleviated'.

Fairfax Media has also revealed that baboons were being bred in Sydney and Melbourne for radical, challenging experiments including the transplantation of a pig's kidney into a baboon's body. That baboon, named Conan, had had to be killed after suffering fatal side effects.

In another experiment to which the Humane Research Australia (HRA) has raised objections a group of marmosets were intentionally given a drug overdose and then had their eyes removed.

Hospitals linked to the experiments refrained from disclosing the number of primates killed or used in the tests but based on figures released by the RSPCA, 46 owl monkeys were imported from the US, 59 common marmosets from Switzerland and France, 10 long-tailed macaques from France, and 255 pigtail macaques from Indonesia.

The HRA has been critical of these experiments on numerous grounds. The group has noted that the test subjects being used are 'highly intelligent animals with complex behaviour and social structure'. The HRA has also added that they are most likely being subjected to 'pain, suffering or distress'.

Helen Marston, the HRA chief executive officer, has stated, 'The procedures these animals have been subjected to are gruesome and could even be compared with Frankenstein-like experiments.'

5. The regulations protecting animals used in product testing, medical research and surgical skills training are inadequate

Dr Denise Russell, a research fellow at the University of Wollongong specialising in animals and ethics, has claimed that there is a lack of adequate ethical scrutiny of the experimental projects in which animals are used.

Dr Russell has stated, 'The ethical scrutiny for research comes at the end of a long process of grant application and approval. There is then an incentive for the animal ethics committees to simply accept the proposals. (If they don't institutions are denied that funding.) The scientists on animal ethics committees are required to be from areas using animal research and can't be expected to have good knowledge of alternatives.'

A similar point was made by Dr Monika Merkes, a social researcher and policy consultant based in Melbourne. She is a member of the Humane Research Australia advisory panel and she has commented on this animal welfare issue with her collaborator, philosophy and computer science student, Rob Buttrose.

In a comment published on the ABC's opinion site, The Drum, on August 1, 2013, the pair stated, 'There is no explicit requirement that the potential benefits for humans outweigh the certain impacts (including pain and death) on animals, let alone that they greatly outweigh them.'

Merkes and Buttrose have also expressed concern that there is too much secrecy surrounding the use of animals for scientific purposes, so that those involved are not open to sufficient scrutiny. The two have noted, 'The new code has not addressed the secrecy surrounding animal research. Animal Ethics Committees (AECs) whose responsibility includes the ethical review, approval and monitoring of animal care and use, do not make their deliberations public. Even basic information about the research that has been approved, such as purpose, types of procedures involved or numbers and species of animals used, is not publicly available.'

In the processing leading up to the revision of the animal welfare regulatory code where animals are being used for scientific purposes, there were several submissions calling for greater openness. Merke and Buttress note that these requests were not met. 'Far from mandating, however, that institutions make public annual reports of compliance and

summaries of external reviews , the new code only states that they "should consider" doing so.'

It has also been noted that requests that the animal handling and treatment practices of research and medical training institutions be overseen by a veterinarian have also not been met. Merke and Buttrose have noted, 'The Australian Veterinary Association (AVA) also argued that a vet should be appointed by institutions to assist AECs with advice on compliance and oversee a program of veterinary care for lab animals. These measures, however, were also not accepted by the NHMRC (National Health and Medical Research Council).'

Arguments in favour using animals for product testing, medical research and surgical skills training

1. The commercial incentive not to animal test cosmetic and household products is growing

Although there are no laws which prohibit the use of animals for the testing of products such as cosmetics and cleaning products, the majority of Australian consumers do not support animals testing of these products and some 40 percent of Australian companies claim not to do such testing of cosmetics.

Two hundred and sixty-six Australian companies have been listed on the Choose Cruelty Free site as selling products that do not test their products on animals nor have components that have been tested overseas on animals.

In May, 2013, Choice magazine listed the following as among the companies that do not use animal testing: Aesop, Akin, Alchemy , Argan Life, Australian Pure, Australis, Aussie Mineral make up Aveda, Bare Essentials, The Body Shop, Catwalk, The Cruelty Free Shop, Dermologica, Eco Tan Face of Australia, Gaia Skin Naturals, Inoxa, Jason, Tri-Shave, Lush, Natio, Nature's Organics, New Directions, Paul Mitchell, Smashbox, Stila Cosmetics, Sukin Organics, Trilogy Urbay Decay.

It has also been noted that China is developing procedures for product testing that do not involve animals. This has been seen as a major step forward and one likely to reduce the number of products that have components within them which have been tested on animals.

(The current requirement of the Chinese market that products be animal-tested has been a significant factor in renewing the extent of animal testing among international companies.)

Australian campaigner, Claire Fryer, has stated, 'This is obviously a huge step for animals within this market. Many, many animals will be spared the pain and suffering of these tests thanks to this non-animal test which will be coming in soon.'

Companies currently ideologically opposed to animal testing have enthusiastically noted this development as they may now soon be able to enter the Chinese market. In addition it has been suggested that once China has an approved process for testing products without using animals, other companies are likely to cease testing on animals.

Claire Fryer has further stated, 'Companies such as Paul Mitchell Systems, Urbay Decay, Dermologica, The Body Shop,...have shown it is important to them to remain cruelty free and all companies should be following suit.'

Opponents of stricter laws to prohibit product testing on animals note that current developments indicate that such laws are not necessary.

2. Using animals for medical research and surgical skills training is sometimes the most suitable option

Regarding surgical skills training, it has been argued that there are some forms of training where only a living animal is sufficient to replicate the circumstances under which the surgeon will ultimately have to work.

In an opinion piece published in The Age on April 26, 2016, John Cunningham, an orthopaedic spinal surgeon at the Royal Melbourne Hospital and the Epworth Richmond sought to demonstrate the relative inadequacy of other surgical training subjects.

Mr Cunningham stated, 'A human cadaver can teach anatomical layout and technical procedure, but lacks feedback about tissue tension, blood pressure and, for example, success in sealing a burst vessel.

A mannequin teaches process and stepwise procedures, but lacks the feel of real tissue. Basic procedures such as cannulation can begin to be taught using mannequin simulators, but it is only by learning on Shylock's pound of flesh that one can learn the sensory feedback of a procedure.'

The United States site, Animal Research, has outlined the extent of rodent use in medical research and why these animals are so important for this process.

The Animal Research site states, 'Specially bred rats and mice are the mammals used most often in medical research. Because rats and mice have so many biological similarities to humans, they make up 90-95% of the mammals in biomedical research. Some strains of rats and mice are susceptible to diseases such as cancer or high blood pressure. In addition, rodents develop diseases over a span of days or weeks instead of months or years. In the 1980s, major research discoveries made it possible to create strains of mice whose genetic make-up has been altered so that they carry specific disease-causing genes.'

Animal Research has also indicated what animals are used for other research purposes: 'Other mammals commonly found in research are guinea pigs, rabbits, hamsters, and farm animals such as pigs and sheep.

Most of these animals are specifically bred and raised for research. Researchers choose the species that best parallels the biology of what they want to study. For example, sheep provide a model to study osteoarthritis, a breakdown of cartilage that occurs as people age, causing pain and inflammation in the joints. Pigs offer a model for research on skin problems, including what may happen when medicine or a toxic substance is absorbed through the skin.'

3. Human life has to take precedence over animal life

Supporters of animals being used for product testing, medical research and surgical skills training typically argue that whatever the importance attached to animal life, human life has to take precedence.

John Cunningham, an orthopaedic spinal surgeon at the Royal Melbourne Hospital and the Epworth Richmond, made this point in an opinion piece published in *The Age* on April 26, 2016.

Mr Cunningham has stated, 'I understand the concerns of animal activists. It is far from ideal that we should use animals in this way, but until a completely lifelike simulator is invented that can mimic humans as closely as animals do, we are obliged to train ourselves in this way. We owe it to our trauma patients.'

It may seem grotesque at first, but if you want your trauma surgeon to train in the most realistic manner, at the sharp end of surgical trauma care, then these animals will possibly one day help save your life.'

James Bourne, the chair of the Nonhuman Primate Breeding and Research Facility Board of the Walter and Eliza Hall Institute has stressed the importance of nonhuman primate research in combating critical diseases which kill human beings.

Bourne has stated, 'If we just look at what's happening today we've got the Ebola and Dengue Fever Viruses, which to get that rapid response, these viruses requires the use of primates and those vaccines are currently being tested in primates.'

4. All possible measures are taken to ensure that the animals used in medical research and surgical skills training do not suffer

It has been noted that in whatever circumstances animals are being used, care is always taken to ensure they are not caused distress.

In an opinion piece published in *The Age* on April 26, 2016, John Cunningham, an orthopaedic spinal surgeon at the Royal Melbourne Hospital and the Epworth Richmond highlighted the caring attitude typical of trainee surgeons.

Mr Cunningham has stated, 'It is human nature to feel for the animals that you are about to learn from, that are going to give up their lives for your education. They were treated with utmost respect. Surgeons are not barbarians, after all - we are in the business of saving lives, and no one would have proceeded if there was any concern that the animal was suffering.'

Mr Cunningham has noted the care which was taken in surgical trauma training practices. Referring to a training course he had undertaken, he stressed the processes which were followed to ensure that the animals used in his training suffered no pain. He stated, '[It was] called the Definitive Surgical Trauma Care course, and taught worldwide. It was several days of didactic teaching, discussion of case management, and simulation using both mannequins and animals such as pigs - alive, but very heavily anaesthetised and completely unaware and unconscious, under the supervision of a veterinary anaesthetist.'

Professor Doug Hilton, director of the Walter and Eliza Hall Institute, has similarly stated, 'The researchers and technicians that work with animals, in my experience, feel a remarkably deep sense of responsibility that comes with the privilege of being able to work with them.'

[It's a] sense of care for those animals that permeated the whole organisation.'

Even those who are critical of the use of animals in surgical skills training have noted that care is taken to ensure that the animals feel no pain.

Dr Tomlinson, a plastic surgeon who is opposed to the use of animals in surgical training has described her own training. Dr Tomlinson stated, 'Because I had expressed concerns ... my demonstrator [a senior surgeon teaching the course] turned up the gas fairly high and said I could be reassured the animal wouldn't feel anything.'

The Royal Australasian College of Surgeons has noted that after the procedures, the animals are humanely killed.

5. Australian laws and regulations ensure that the animals used in product testing, medical research and surgical skills training are humanely treated

Supporters of the use of live animals in product testing, medical research and surgical skills training argue that there are strict regulations to ensure that these animals are treated humanely and not abused at any point.

The Australian Code for the Care and Use of Animals for Scientific Purposes 8th edition (2013) provides the regulatory framework governing the use of animals for these purposes in Australia. The summary of the Code states, 'The Code provides an ethical framework and governing principles to guide the decisions and actions of all those involved in the care and use of animals. It details the responsibilities of investigators, animal carers, institutions, and animal ethics committees, and describes processes for accountability.'

Among the stipulations stated within the Code's introduction are: 'The use of animals for scientific purposes must have scientific or educational merit; must aim to benefit humans, animals or the environment; and must be conducted with integrity. When animals are used, the number of animals involved must be minimised, the wellbeing of the animals must be supported, and harm, including pain and distress, in those animals must be avoided or minimised.'

The introduction to the Code further states, 'The Code encompasses all aspects of the care and use of animals when the aim is to acquire, develop or demonstrate knowledge or techniques in any area of science-for example, medicine, biology, agriculture, veterinary and other animal sciences, industry and teaching. It includes the use of animals in research, teaching associated with an educational outcome in science, field trials, product testing, diagnosis, the production of biological products and environmental studies.'

It has been noted that the care requirements are quite specific. For example, the regulations regarding the transport of animals state: 'Methods and arrangements for the transport of animals must support and safeguard the wellbeing of the animals before, during and after their transport, and take into account the health, temperament, age, sex and previous experiences of the animals; the number of animals travelling together and their social relationships; the period without food or water; the duration and mode of transport; environmental conditions (particularly extremes of temperature); and

the care given during the journey.'

Further implications

There have now been numerous attempts to pass legislation banning the use of animal testing in Australia and the importation of cosmetics which have been all or partially tested on animals. There is also a review currently being conducted by the National Health and Medical Research Council (NHMRC) on the care and use of non-human primates for scientific purposes.

The outcome of both of these developments is uncertain. Numerous attempts in the past to ban the use of animal testing of cosmetic and household products have been unsuccessful. Popular demands for cruelty-free products are likely to accelerate the sale of products guaranteed not to have been tested on animals. This trend will be increased by the recent developments in China toward testing procedures that do not involve animals.

It seems unlikely that the NHMRC will result in major changes. A 2013 review of the Australian Code for the Care and Use of Animals for Scientific Purposes did not result in any substantial changes in the procedures governing the use of animals for scientific research.

A reduction of the use of animals for product testing, scientific research and surgical skills training is likely to occur as a result of other developments apart from a change in laws and regulations.

Commercial pressure from consumers is clearly having an impact on the manufacturers of cosmetics and household products. Some animal welfare groups have drawn attention to manufacturers making fraudulent claims regarding the cruelty-free status of their products. It is clear that these manufacturers see a commercial advantage in being cruelty-free. Fear of exposure may be more effective than regulation in ensuring that the use of animal testing of cosmetics and household products becomes progressively less.

Re the use of animals in medical research and surgical skills training, technological developments (such as 'organs-on-a-chip' for research and animation programs and advanced mannequins for surgical training) are likely to ultimately see the use of animals largely ended.

Vivisection is publically not well supported and is expensive and not always reliable. The European Union has taken legislative measures to reduce product testing. Within Australia, even without legislation, both product testing and scientific research are likely to occur without the use of animals.

Newspaper items used in the compilation of this issue outline (see also Internet Information section for other newspaper items - see online outline for video and other links in the **Web links and documents** section

The Age: April 15, 2016, page 18, letters incl, 'Pointless suffering / Where's the cruelty?'

<http://www.theage.com.au/comment/the-age-letters/democracy-where-are-the-coherent-voices-from-the-right-20160414-go6bze.html>

The Age: April 14, 2016, page 5, news item (photo) by Julia Medew, 'Surgeon pleads for end to use of animals in training'.

<http://www.theage.com.au/victoria/royal-australasian-college-of-surgeons-under-fire-over-live-animal-labs-20160413-go5az6.html>

The Age: April 28, 2016, page 29, comment by Marie Crandall, 'No need to use animals to teach trauma surgery skills'.

<http://www.theage.com.au/comment/no-need-to-use-animals-to-teach-trauma-surgery-skills-20160427-goftbu.html>

The Age: April 26, 2016, page 19, comment by John Cunningham, 'Surgeons trained on living animals save lives'.

<http://www.smh.com.au/comment/surgeons-trained-on-live-animals-save-lives-20160420-gobgug.html>